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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,743	10/14/2003	Hideo Tabuchi	16869P-015010US	6126

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EXAMINER	
PHAM, HUNG Q	
ART UNIT	**PAPER NUMBER**
2162	

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/685,743	TABUCHI ET AL.	
	Examiner	Art Unit	
	HUNG Q PHAM	2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/698,809.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of a claim for domestic priority under 35 U.S.C § 120.

Claim Objections

2. Claim 8 is objected to because of the following informalities: ***a means for deciding an oldest time from among a plurality of latest times associated with the second storage subsystems by the communicating the latest time from at least some of the second storage subsystems to the other second storage subsystems***. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 8, 15 and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the

inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1, 4, 8, 15, and 22, the claimed ***wherein an oldest time is decided from among a plurality of latest time by each of storage subsystems of the second storage subsystem group***, and ***each latest time being communicated between at least some of the storage subsystems of the second storage subsystem group*** of claim 1, the claimed ***deciding an oldest time from among a plurality of latest time... by communicating the latest time from at least some of the second storage subsystems to the other second storage subsystems*** of claim 8, the claimed ***deciding the oldest time among the kinds of latest time given to each of the storage subsystems by communicating at least some of the latest times among the other storage subsystems***, and ***operating the first means at the remote mode*** of claim 15, and the claimed ***communicating said most recent time to at least another of said disk subsystems to form a plurality of data having a most recent time*** are not described in the specification.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. As in claim 1, ***the a plurality of latest times*** makes the claimed ***wherein an oldest time is decided from among the a plurality of latest times*** indefinite.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Micka et al. [USP 5,577,222].

Regarding claims 1 and 8, Micka teaches ***a method of duplicating data in a system*** (Col. 1, Lines 9-11). The system is ***provided with a first storage subsystem group, comprising a first plurality of storage subsystems*** (FIG. 1, DASD 14), ***and a second storage subsystem group, comprising a second plurality of storage subsystems wherein the storage subsystems of the second storage subsystem group stores copies of the data of the first storage subsystem group*** (FIG. 1, DASD 20). The selected system 16 has data mover 104, and VTAM 106 for communication. Data mover 104 includes a serializer and a data mover. The serializer receives a write sequence information packet for every write operation on

all DASD subsystems 14 in the primary that has been selected for duplexing or maintaining a shadow copy at the secondary (Col. 4, Lines 7-22). As seen, the write operation on DASD 14 of selected system 16 performs the claimed ***each of the storage subsystems of the first storage subsystem group writes the data into a storage device of the first storage subsystem group***. The data mover 104 returns the write information packet with its assigned global sequence number and time stamp to the DASD subsystem (Col. 5, Lines 21-24 and Col. 6, Lines 65-67) as the step of ***assigning a serial number and a time***. Thereafter is the disclosure of the step of ***transferring the data through a transmission line to at least one of the second plurality of storage subsystems of the second storage subsystem group*** at Col. 4, Lines 22-41. Micka further teaches that ***a plurality of data received by each of the storage subsystems of the second storage subsystem group is arranged sequentially based on the serial numbers*** (Col. 6, Lines 7-19), ***an oldest time is decided from among a plurality of latest times*** given to the secondary ***by*** the communication with ***each*** DASD 20 as ***the storage subsystems*** of the secondary or ***second storage system group*** (Col. 7, Lines 35-43), ***each latest time being related to the plurality of data arranged based on the serial numbers*** (FIG. 6), ***each latest time*** given to the secondary ***being*** compared with each other as ***communicated between at least some of the storage subsystems of the second storage subsystem group*** (Col. 7, Lines 35-43), and ***data having a time not later than the decided oldest time are selected as data to be written to the storage device of each of the storage subsystems of the second storage subsystem group*** (Col. 7, Lines 44-58).

Regarding claim 15, Micka teaches a method of duplicating data in a system (Col. 1, Lines 9-11). The system is provided with ***storage subsystem belongs to a storage subsystem group comprising a plurality of storage subsystems*** (FIG. 1, DASD 14. The selected system 16 has data mover 104, and VTAM 106 for communication. Data mover 104 includes a serializer and a data mover. The serializer receives a write sequence information packet for every write operation on all DASD subsystems 14 in the primary that has been selected for duplexing or maintaining a shadow copy at the secondary (Col. 4, Lines 7-22). As seen, the write operation on DASD 14 of selected system 16 performs the claimed ***a first means of writing data received from outside to the storage device of the storage subsystem***. The data mover 104 returns the write information packet with its assigned global sequence number as ***a serial number*** and ***time*** stamp to the DASD subsystem (Col. 5, Lines 21-24 and Col. 6, Lines 65-67). Thereafter is the disclosure of the step of ***a second means of transmitting said data being given a serial number and a time to other storage subsystems*** at Col. 4, Lines 22-41. Micka further teaches ***a third means of arranging a plurality of data received from other storage subsystems in sequence of said serial numbers*** (Col. 6, Lines 7-19), a fourth means of deciding ***an oldest time among the kinds of latest times given to each*** DASD 14 as ***the storage subsystems*** (Col. 7, Lines 35-43), each latest time given to the secondary being compared with each other as ***communicating at least some of the latest times among the other storage subsystems*** (Col. 7, Lines 35-43), ***operates the first means and the second means when said storage subsystem is in local mode*** (Col. 4, Line 57-Col. 5, Line 4) and ***decides the data given with the time not later than the decided oldest time as the object of writing data by the first means***

operating the third means, the fourth means, and the first means at the remote mode (Col. 6, Lines 20-Col. 8, Line 20, and Col. 4, Lines 57-62).

Regarding claim 22, Micka teaches ***a method of duplicating data in a system*** (Col. 1, Lines 9-11). The system is provided with a primary (FIG. 1, DASD 14), and a secondary (FIG. 1, DASD 20). The selected system 16 has data mover 104, and VTAM 106 for communication. Data mover 104 includes a serializer and a data mover. The serializer receives a write sequence information packet for every write operation on all DASD subsystems 14 in the primary that has been selected for duplexing or maintaining a shadow copy at the secondary (Col. 4, Lines 7-22) as the step of ***receiving a plurality of data***. The data mover 104 returns the write information packet with its assigned global sequence number and time stamp to the DASD subsystem (Col. 5, Lines 21-24 and Col. 6, Lines 65-67) as the step of ***associating a time of receipt and a serial number with each of said plurality of data at each disk subsystem***. Thereafter is the disclosure of the step of ***determining a most recent time from among data received, determining from said plurality of data having a most recent time, a data having an oldest most recent time*** (Col. 7, Lines 35-43), the latest time corresponds to subsystems being compared with each other as ***communicating said most recent time to at least another of said disk subsystems to form a plurality of data having a most recent time*** as at FIG. 6, and ***writing data having a time prior to said oldest most recent time to storage*** (Col. 7, Lines 44-58).

Regarding claim 2, 9 and 16, Micka teaches all of the claimed subject matter as discussed above with respect to claims 1, 8 and 15, Mika further discloses ***said transmission line connecting a storage subsystem, which belongs to said first storage subsystem group and a storage subsystem, which belongs to said second storage subsystem group comprises Storage Area Network (SAN)*** (Fig 1; Col. 1, Lines 9-11).

Regarding claim 3, 10 and 17, Micka teaches all of the claimed subject matter as discussed above with respect to claims 1, 8 and 15, Micka further discloses ***a clock providing said time to each of the storage subsystems of said first storage subsystem group is corrected by an external source of time information*** (Fig 5; Col. 2, Lines 40-45).

Regarding claims 4, 11 and 18, Micka teaches all of the claimed subject matter as discussed above with respect to claims 1, 8 and 15, Micka further discloses ***the connections among the storage subsystems of said second storage subsystem group are made by loop transmission lines*** (FIG. 1), ***each of the storage subsystems informs other storage subsystems of a latest time from among times associated with individual data copies stored within said storage subsystem, and thereupon, an oldest time is determined from among the latest times of each of the storage subsystems in said second storage subsystem group*** (Col. 7, Lines 17-58).

Regarding claims 5, 12 and 19, Micka teaches all of the claimed subject matter as discussed above with respect to claims 1, 8 and 15, Micka further discloses ***one of***

the plurality of storage subsystems which belongs to said second storage subsystem group is set as a master storage subsystem, and wherein each of the storage subsystems, other than the master storage subsystem, notifies the master storage subsystem of a latest time of data in each of said other storage subsystems, and the master storage subsystem decides said oldest latest time of data in each of said other storage subsystems and a latest time of data stored in said master storage subsystem (Col. 7, Lines 17-58).

Regarding claims 6, 13 and 20, Micka teaches all of the claimed subject matter as discussed above with respect to claims 1, 8 and 15, Micka further discloses ***a plurality of storage subsystems of said first storage subsystem group transfer each of writing data to one of the storage subsystems of said second storage subsystem group, the one of the storage subsystems of the second storage subsystem group selects the latest time that is given to each of said storage subsystems of the first storage subsystem group and decides the oldest time from among the selected latest times*** (Col. 7, Lines 17-58).

Regarding claims 7, 14 and 21, Micka teaches all of the claimed subject matter as discussed above with respect to claims 1, 8 and 15, Micka further discloses ***a storage device of said storage subsystem is comprised of volumes and a volume pair is comprised of a volume of the first storage subsystem group and a volume of the second storage subsystem group*** (Fig 1-2; Col. 4, Lines 50-51), ***the storage subsystem which belongs to the first storage subsystem group controls a start and a stop of data transmission to the second storage***

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG Q PHAM whose telephone number is 571-272-4040. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN E BREENE can be reached on 571-272-4107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner Hung Pham
November 18, 2004

SHAHID ALAM
PRIMARY EXAMINER

subsystem group with the unit of each of the volume groups comprised of a plurality of volume pairs (Col. 4, Lines 20-25, 50-55).